ENVIRONMENTAL HEALTH PERSPECTIVES

Volume 80, March 1989

U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES
Public Health Service
National Institutes of Health

David P. Rall, Director
National Institute of Environmental Health Sciences

EDITORS

George W. Lucier

Gary E. R. Hook

BOARD OF EDITORS

Colin F. Chignell
Larry G. Hart
Joseph K. Haseman
David G. Hoel
James Huff
Burke Judd
Heinrich V. Malling
H. B. Matthews
Ernest E. McConnell
James D. McKinney
John A. McLachlan
Clifford L. Mitchell
Warren T. Piver
Bernard A. Schwetz
Raymond W. Tennant

EDITORIAL REVIEW BOARD

Phillip W. Albro
Herbert L. Amyx
J. Carl Barrett
John R. Bend
Linda S. Birnbaum
Stephen C. Bondy
Gary A. Boorman
Arnold R. Brody
Robert E. Chapin
Rajendra S. Chhabra
Gary Clemons
Terri Damstra
David DeMarini
John M. Dement
Richard P. DiAugustine
Robert T. Drew
Richard B. Everson
Bruce A. Fowler
Donald Gardner
Beth Gladen
Robert A. Goyer
Joe W. Grisham
Frank E. Guthrie
Victor Hasselblad
Jerrold J. Heindel
Ernest Hodgson
Michael D. Hogan
David J. Holbrook
Jau-Shyong Hong
Anton M. Jetten
David G. Kaufman
Kenneth S. Korach
Joellen E. Lewtas
Robert E. London
Michael I. Luster
Robert Maronpot
Ronald P. Mason
Edward J. Massaro
Donald I. McRee
Ronald L. Melnick
George K. Michalopoulos
Tom S. Miya
Robert A. Neal
Richard M. Philpot
Christopher J. Portier
Philip Pratt
John B. Pritchard
James W. Putney
Walter J. Rogan
Michael D. Shelby
William Sheridan
Daniel C. VanderMeer
Michael D. Waters
Clarice R. Weinberg
Errol Zeiger

EDITORIAL STAFF

Dorothy L. Ritter
Assistant Managing Editor

Program Resources, Inc.
Copy Editor

CONTENTS

Monograph on Regulation of Differentiation in Eukaryotic Cell Systems

E. Abemayor and N. Sidell. Human neuroblastoma cell lines as models for the *in vitro* study of neoplastic and neuronal cell differentiation 3

G. Ailhaud, C. Dani, E-Z. Amri, P. Djian, C. Vannier, A. Doglio, C. Forest, D. Gaillard, R. Négrel, and P. Grimaldi. Coupling growth arrest and adipocyte differentiation 17

S. Astigiano, M. I. Sherman, and P. Abarzúa. Regulation and patterns of endogenous and exogenous gene expression during differentiation of embryonal carcinoma cells 25

R. Barraclough and P. S. Rudland. Differentiation of mammary stem cells *in vivo* and *in vitro* 39

D. C. Bennett. Mechanisms of differentiation in melanoma cells and melanocytes 49

M. J. Bissell and T. G. Ram. Regulation of functional cytodifferentiation and histogenesis in mammary epithelial cells: Role of the extracellular matrix 61

J. L. Blum, M. E. Zeigler, and M. S. Wicha. Regulation of mammary differentiation by the extracellular matrix 71

F. Borellini and T. Oka. Growth control and differentiation in mammary epithelial cells 85

G. Cameron, C. D. Woodworth, S. Edmondson, and B. T. Mossman. Mechanisms of asbestos-induced squamous metaplasia in tracheobronchial epithelial cells 101

R. L. Eckert and E. A. Rorke. Molecular biology of keratinocyte differentiation 109

M. Filipak, D. N. Estervig, C-Y. Tzen, P. Minoo, B. J. Hoerl, P. B. Maercklein, M. A. Zschunke, M. Edens, and R. E. Scott. Integrated control of proliferation and differentiation of mesenchymal stem cells 117

K. Fujita, P. Lazarovici, and G. Guroff. Regulation of the differentiation of PC12 pheochromocytoma cells 127

L. Glaser and B. Wice. Control of differentiation in BC_3H1 muscle cells 143

A. M. Jetten. Multistep process of squamous differentiation in tracheobronchial epithelial cells *in vitro*: Analogy with epidermal differentiation 149

H. M. Lachman. c-*myc* Protooncogene expression in mouse erythroleukemia cells 161

J. E. Lever. Chemical inducers of differentiation in a long-term renal cell line 173

P. A. Marks and R. A. Rifkind. Induced differentiation of erythroleukemia cells by hexamethylene bisacetamide: A model for cytodifferentiation of transformed cells 181

L. A. Michalowsky and P. A. Jones. DNA methylation and differentiation 189

M. Ogawa. Hemopoietic stem cells: Stochastic differentiation and humoral control of proliferation 199

A. M. A. Pfeifer, J. F. Lechner, T. Masui, R. R. Reddel, G. E. Mark, and C. C. Harris. Control of growth and squamous differentiation in normal human bronchial epithelial cells by chemical and biological modifiers and transferred genes 209

D. F. Pinney and C. P. Emerson, Jr. 10T1/2 cells: An *in vitro* model for molecular genetic analysis of mesodermal determination and differentiation 221

J. I. Rearick and A. M. Jetten. Effect of substratum and retinoids upon the mucosecretory differentiation of airway epithelial cells *in vitro* 229

R. H. Rice, A. D. LaMontagne, C. T. Petito, and X. Rong. Differentiation of cultured epithelial cells: Response to toxic agents 239

T. Sejersen, P. Jin, M. Rahm, and N. R. Ringertz. Changes in c-*onc* expression during embryonal carcinoma cell differentiation 247

Published Volumes of EHP 257

Instructions to Authors 259